



### Homework 4: Thinking logically

1. (a) How many lines of output will the following pseudocode algorithm produce?

Show your calculation.

[3]

```
for a = 8 to 19 step 4
  for b = 1 to 3
    if a mod b >= b/3 then
      if a/4 <= b+1 then
        print ("Homer")
      else
        print ("Marge")
      endif
    else
      print ("Bart")
    endif
  next b
next a
```

- (b) Trace through the pseudocode and write down what is output.

[4]

2. You need to make  $n$  pancakes for a number of people as quickly as possible. Your only frying pan is big enough to make two pancakes at a time. A pancake needs one minute's cooking on each side, regardless of whether there are one or two pancakes in the pan.

- (a) What is the minimum time to fry 3 pancakes?

[1]

- (b) Explain how you arrived at your answer.

[2]

- (c) What is the minimum time to fry  $n$  pancakes?



3. (a) A firm of caterers has been hired to cater for a fundraising dinner at a village hall. Here is a list of tasks:

Prepare vegetables, Serve wine, Heat main course, Whip cream,  
Prepare fruit salad, Lay tables, Set out tables, Set out chairs, Serve  
coffee

- (i) List **five** of the tasks which can be done concurrently. [2]

- (ii) List **five** tasks which must be done sequentially, specifying the order in which they must be done. [2]

- (b) An airline reservation system is an example of concurrent processing.

Describe briefly another example of concurrent processing in a computer system.

[2]

- (c) List **two** benefits and **two** drawbacks that may result for concurrent processing.[4]



Total 20 marks